

## IN THE CLAIMS

1. (currently amended) Glass-ceramics having an average linear thermal expansion coefficient within a range of  $0.0 \pm 0.2 \times 10^{-7}/^{\circ}\text{C}$  within a temperature range from  $0^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ , having difference between the maximum value and the minimum value of  $\Delta L/L$  of  $10 \times 10^{-7}$  or below, and comprising  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$  and  $\text{P}_2\text{O}_5$  with the total amount thereof in mass % being within a range from ~~86.0%~~ 86.7% to 89.0% and further comprising  $\text{CaO}$  in an amount of 0.5 mass % or more, wherein the ratio of  $\text{P}_2\text{O}_5$  to  $\text{Al}_2\text{O}_3$  in mass % is within a range from 0.270 to 0.33.

2. (previously presented) Glass-ceramics as defined in claim 1 wherein the ratio of  $\text{P}_2\text{O}_5$  to  $\text{SiO}_2$  in mass % and the ratio of  $\text{P}_2\text{O}_5$  to  $\text{Al}_2\text{O}_3$  are

$$\begin{array}{ll} \text{P}_2\text{O}_5/\text{SiO}_2 & 0.1230 - 0.1450 \text{ and} \\ \text{P}_2\text{O}_5/\text{Al}_2\text{O}_3 & 0.270 - 0.330. \end{array}$$

3. (currently amended) Glass-ceramics having an average linear thermal expansion coefficient within a range of  $0.0 \pm 0.1 \times 10^{-7}/^{\circ}\text{C}$  within a temperature range from  $0^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ , having difference between the maximum value and the minimum value of  $\Delta L/L$  of  $8 \times 10^{-7}$  or below, and comprising  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$  and  $\text{P}_2\text{O}_5$  with the total amount thereof in mass % being within a range from ~~86.0%~~ 86.7% to 89.0%% and further comprising  $\text{CaO}$  in an amount of 0.5 mass % or more, wherein the ratio of  $\text{P}_2\text{O}_5$  to  $\text{Al}_2\text{O}_3$  in mass % is within a range from 0.270 to 0.33.

4. (previously submitted) Glass-ceramics as defined in claim 3 wherein the ratio of  $\text{P}_2\text{O}_5$  to  $\text{SiO}_2$  in mass % and the ratio of  $\text{P}_2\text{O}_5$  to  $\text{Al}_2\text{O}_3$  are

$$\begin{array}{ll} \text{P}_2\text{O}_5/\text{SiO}_2 & 0.1230 - 0.1450 \text{ and} \\ \text{P}_2\text{O}_5/\text{Al}_2\text{O}_3 & 0.270 - 0.330. \end{array}$$

5. (original) Glass-ceramics as defined in claim 1 wherein surface roughness (Ra)

(arithmetic mean roughness) is 3 Å or below.

6. (original) Glass-ceramics as defined in claim 1 wherein an average crystal grain diameter of precipitating crystal phase or phases is within a range from 50nm to 90nm.

7. (original) Glass-ceramics as defined in claim 1 which comprise  $\beta$ -quartz ( $\beta$ -SiO<sub>2</sub>) and/or  $\beta$ -quartz solid solution ( $\beta$ -SiO<sub>2</sub> solid solution) as a predominant crystal phase.

8. (original) Glass-ceramics as defined in claim 1 which are free of PbO, Na<sub>2</sub>O, K<sub>2</sub>O and B<sub>2</sub>O<sub>3</sub>.

9. (original) Glass-ceramics as defined in claim 1 obtained by heat treating, for crystallization, a base glass which comprises, in mass %,

SiO <sub>2</sub>	53 – 57%
P <sub>2</sub> O <sub>5</sub>	7.0 – 8.5% and
Al <sub>2</sub> O <sub>3</sub>	23 – 26%

and is substantially free of PbO, Na<sub>2</sub>O, K<sub>2</sub>O and B<sub>2</sub>O<sub>3</sub>, said glass-ceramics comprising  $\beta$ -quartz ( $\beta$ -SiO<sub>2</sub>) and/or  $\beta$ -quartz solid solution ( $\beta$ -SiO<sub>2</sub> solid solution) as a predominant crystal phase.

10. (original) Glass-ceramics as defined in claim 9 comprising, in mass %, Li<sub>2</sub>O within a range of 3.5 – 4.5%.

11. (currently amended) Glass-ceramics as defined in claim 10 comprising, in mass %,

<u>CaO</u>	<u>0.5 – 1.5% and</u>
MgO	0.5 – 1.5% and/or
ZnO	0.1 – 1.5% and/or
<del>CaO</del>	<del>0.5 – 1.5% and/or</del>
BaO	0.5 – 1.5% and/or
TiO <sub>2</sub>	1.5 – 3.0% and/or

ZrO <sub>2</sub>	1.0 – 3.0% and/or
As <sub>2</sub> O <sub>3</sub>	0.5 – 1.0%.

12. (original) Glass-ceramics as defined in claim 1 wherein the maximum temperature of the heat treatment for crystallization is within a range from 750°C to 800°C.

13. (previously submitted) A mask for lithography comprising glass-ceramics as defined in claim 1.

14. (previously submitted) An optical system reflecting mirror for lithography comprising glass-ceramics as defined in claim 1.

15. (previously submitted) A wafer stage or a reticle stage for lithography comprising glass-ceramics as defined in claim 1.

16. (previously submitted) A component part of a precision instrument comprising glass-ceramics as defined in claim 1.

17. (original) Glass-ceramics as defined in claim 3 wherein surface roughness (Ra) (arithmetic mean roughness) is 3 Å or below.

18. (original) Glass-ceramics as defined in claim 3 wherein an average crystal grain diameter of precipitating crystal phase or phases is within a range from 50nm to 90nm.

19. (original) Glass-ceramics as defined in claim 3 which comprise  $\beta$ -quartz ( $\beta$ -SiO<sub>2</sub>) and/or  $\beta$ -quartz solid solution ( $\beta$ -SiO<sub>2</sub> solid solution) as a predominant crystal phase.

20. (original) Glass-ceramics as defined in claim 3 which are free of PbO, Na<sub>2</sub>O, K<sub>2</sub>O and B<sub>2</sub>O<sub>3</sub>.

21. (original) Glass-ceramics as defined in claim 3 obtained by heat treating, for

crystallization, a base glass which comprises, in mass %,

SiO <sub>2</sub>	53 -- 57%
P <sub>2</sub> O <sub>5</sub>	7.0 -- 8.5% and
Al <sub>2</sub> O <sub>3</sub>	23 -- 26%

and is substantially free of PbO, Na<sub>2</sub>O, K<sub>2</sub>O and B<sub>2</sub>O<sub>3</sub>, said glass-ceramics comprising  $\beta$ -quartz ( $\beta$ -SiO<sub>2</sub>) and/or  $\beta$ -quartz solid solution ( $\beta$ -SiO<sub>2</sub> solid solution) as a predominant crystal phase.

22. (original) Glass-ceramics as defined in claim 21 comprising, in mass %, Li<sub>2</sub>O within a range of 3.5 -- 4.5%.

23. (currently amended) Glass-ceramics as defined in claim 22 comprising, in mass %,

CaO	0.5 -- 1.5% and
MgO	0.5 -- 1.5% and/or
ZnO	0.1 -- 1.5% and/or
<del>CaO</del>	<del>0.5 -- 1.5% and/or</del>
BaO	0.5 -- 1.5% and/or
TiO <sub>2</sub>	1.5 -- 3.0% and/or
ZrO <sub>2</sub>	1.0 -- 3.0% and/or
As <sub>2</sub> O <sub>3</sub>	0.5 -- 1.0%.

24. (original) Glass-ceramics as defined in claim 3 wherein the maximum temperature of the heat treatment for crystallization is within a range from 750°C to 800°C.

25. (previously submitted) A mask for lithography comprising glass-ceramics as defined in claim 3.

26. (previously submitted) An optical system reflecting mirror for lithography comprising glass-ceramics as defined in claim 3.

27. (previously submitted) A wafer stage or a reticle stage for lithography comprising glass-ceramics as defined in claim 3.

28. (previously submitted) A component part of a precision instrument comprising glass-ceramics as defined in claim 3.

29. (original) Glass-ceramics as defined in claim 2 obtained by heat treating, for crystallization, a base glass which comprises, in mass %,

SiO <sub>2</sub>	53 – 57%
P <sub>2</sub> O <sub>5</sub>	7.0 – 8.5% and
Al <sub>2</sub> O <sub>3</sub>	23 – 26%

and is substantially free of PbO, Na<sub>2</sub>O, K<sub>2</sub>O and B<sub>2</sub>O<sub>3</sub>, said glass-ceramics comprising  $\beta$ -quartz ( $\beta$ -SiO<sub>2</sub>) and/or  $\beta$ -quartz solid solution ( $\beta$ -SiO<sub>2</sub> solid solution) as a predominant crystal phase.

30. (original) Glass-ceramics as defined in claim 29 comprising, in mass %, Li<sub>2</sub>O within a range of 3.5 – 4.5%.

31. (currently amended) Glass-ceramics as defined in claim 30 comprising, in mass %,

CaO	0.5 – 1.5% and
MgO	0.5 – 1.5% and/or
ZnO	0.1 – 1.5% and/or
CaO	<del>0.5 – 1.5% and/or</del>
BaO	0.5 – 1.5% and/or
TiO <sub>2</sub>	1.5 – 3.0% and/or
ZrO <sub>2</sub>	1.0 – 3.0% and/or
As <sub>2</sub> O <sub>3</sub>	0.5 – 1.0%.

32. (original) Glass-ceramics as defined in claim 4 obtained by heat treating, for crystallization, a base glass which comprises, in mass %,

SiO <sub>2</sub>	53 – 57%
------------------	----------

$P_2O_5$  7.0 – 8.5% and

$Al_2O_3$  23 – 26%

and is substantially free of  $PbO$ ,  $Na_2O$ ,  $K_2O$  and  $B_2O_3$ , said glass-ceramics comprising  $\beta$ -quartz ( $\beta$ - $SiO_2$ ) and/or  $\beta$ -quartz solid solution ( $\beta$ - $SiO_2$  solid solution) as a predominant crystal phase.

33. (original) Glass-ceramics as defined in claim 32 comprising, in mass %,  $Li_2O$  within a range of 3.5 – 4.5%.

34. (original) Glass-ceramics as defined in claim 33 comprising, in mass %,

$MgO$  0.5 – 1.5% and/or

$ZnO$  0.1 – 1.5% and/or

$CaO$  0.5 – 1.5% and/or

$BaO$  0.5 – 1.5% and/or

$TiO_2$  1.5 – 3.0% and/or

$ZrO_2$  1.0 – 3.0% and/or

$As_2O_3$  0.5 – 1.0%.